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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.     | CONFIRMATION NO. |
|--|-------------|----------------------|-------------------------|------------------|
| 09/925,743   | 08/10/2001  | Kenji Hagiwara       | 107101-00034            | 6655             |
| 7590   | 07/19/2005  |                      | EXAMINER                |                  |
| AREN'T FOX KINTNER PLOTKIN & KAHN, PLLC<br>1050 CONNECTICUT ACENUE, N.W.<br>SUITE 400<br>WASHINGTON, DC 20036-5339 |             |                      | SAXENA, AKASH           |                  |
|  |             |                      | ART UNIT                | PAPER NUMBER     |
|  |             |                      | 2128                    |                  |
|  |             |                      | DATE MAILED: 07/19/2005 |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 09/925,743             | HAGIWARA ET AL.     |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Akash Saxena           | 2128                |

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 10 August 2001.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-13, 15-30 and 32-34 is/are pending in the application.
  - 4a) Of the above claim(s) 14 and 31 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-13, 15-30 and 32-34 is/are rejected.
- 7) Claim(s) 5 and 6 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All    b) Some \* c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                                    |

***DETAILED ACTION***

1. Claims 1-13, 15-30 and 32-34 have been presented for examination based on the application filed on 10th August 2001.
2. Claims 14 & 31 were cancelled by preliminary amendment filed on 7th November 2003.
3. Acknowledgment is made of applicant's form PTO 1449 (IDS) filed on 9th March 2004 with accompanying references.
4. Acknowledgment is made of applicant's change of address filed on 4th March 2003.
5. All amended claims 1-13, 15-30 and 32-34 are rejected.

***Priority***

6. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) from Japanese applications No. 2000-244412, 2000-244413 with priority date of 11<sup>th</sup> August 2000.

***Specification***

7. The abstract of the disclosure is objected to because of grammatical error on line 3.

"A simulator comprising computer-aided design programs for simulating a shift control algorithm stored in an ECU of an automatic transmission having hydraulic clutches. In the simulator, a simplified [missing] hydraulic describing the behavior of..."

The tag [missing] indicated something seems to be missing in the sentence.

Correction is required. See MPEP § 608.01(b).

***Claim Objections***

8. Amended Claim 5 is objected to due to grammatical error in the underlined portion.

Appropriate corrections are required.

"The simulator according to claim 1, wherein the transfer functions include at one transfer function which is multiplied to an input of the second model such that the output of the second model converges with the estimated effective hydraulic pressure."

9. Claims 6 is improperly dependent on claim 2 and claim 23 is improperly dependent on claim 19.

A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim, which depends from a dependent claim, should not be separated by any claim, which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

10. The attempt to incorporate subject matter into this application by reference to U.S. Patent Application No. 09/802,974 filed on Mar. 12, 2001 is ineffective because the root words "incorporate" and/or "reference" have been omitted, see 37 CFR 1.57(b)(1).

The incorporation by reference will not be effective until correction is made to comply with 37 CFR 1.57(b), (c), or (d). If the incorporated material is relied upon to meet any outstanding objection, rejection, or other requirement imposed by the Office, the correction must be made within any time period set by the Office for responding to the objection, rejection, or other requirement for the incorporation to be effective. Compliance will not be held in abeyance with respect to responding to the objection,

rejection, or other requirement for the incorporation to be effective. In no case may the correction be made later than the close of prosecution as defined in 37 CFR 1.114(b), or abandonment of the application, whichever occurs earlier.

Any correction inserting material by amendment that was previously incorporated by reference must be accompanied by a statement that the material being inserted is the material incorporated by reference and the amendment contains no new matter 37 CFR 1.57(f).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 1-13, 15-30 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over article "Object-Oriented Modeling for Gasoline Engine and Automatic Transmission Systems" by K. Hong et al. (Hong '1998 hereafter) in view of U.S. Patent No. 5,885,188 issued to Naonori Iizuka (Iizuka '188 hereafter).

Regarding Claim 1

Hong '1998 teaches

"A simulator having computer-aided design programs for simulating a shift control algorithm stored in a shift controller of an automatic transmission mounted on a vehicle and having a hydraulic actuator to transmit power generated by an internal combustion engine to drive wheels based on at least throttle opening and vehicle speed in accordance with the shift control algorithm, comprising; ..."

as a MATLAB/SIMULINK simulator (Hong '1998: Pg.109), simulating a shift control algorithm (Hong '1998: Pg.109, Abstract) for shift controller of an automatic transmission for a vehicle with internal combustion engine (Hong '1998: Abstract) based on the at least throttle opening and vehicle speed (Hong '1998: Page 114).

Further, Hong '1998 teaches

"a control system design tool which is connected to the shift controller to inputs the shift control algorithm and which outputs a hydraulic pressure supply command based on the inputted shift control algorithm;..."

as MATLAB/SIMULINK Tool (Hong '1998: Pg.109, Abstract) which can be connected to the shift controller (Hong '1998: Page 108, 3<sup>rd</sup> Paragraph) to input the algorithm which outputs the hydraulic pressure supply command based on the algorithm (Hong '1998: Pg.109, Abstract).

Further, Hong '1998 teaches

"a first simulator section which is connected to the control system design tool to inputs the hydraulic pressure supply command and which estimates an effective clutch pressure that is assumably generated in the hydraulic actuator in response to the hydraulic pressure supply command based on a first model describing entire system including the transmission; ..."

As a first simulator to input the hydraulic pressure supply command (Hong '1998: Pg.113, "AT Controller Module") which estimates an effective clutch pressure based on the first model describing the entire system including transmission (Hong '1998: Pg.109 3<sup>rd</sup> Paragraph).

Hong '1998 does not teach a second model describing the behavior of hydraulic actuator such that first and second model converge.

Iizuka '188 teaches

"and a second simulator section which is connected to the control system design tool and the first simulator section and which determines transfer functions of a second model describing behavior of the hydraulic actuator such that an output of the second model converges the estimated effective hydraulic pressure; wherein the second simulator section simulates and evaluates the shift control algorithm based on a third model obtained by incorporating the second model with the first model."

as a second simulator section as a learning control section on a CPU (Iizuka '188: Col.6, Lines 13-16; Fig.1, Elements 26-28) which determines the transfer functions (alpha1)(Iizuka '188: Col.6, Lines 30-42) (alpha2) (Iizuka '188: Col.6, Lines 42-29).

Iizuka '188 teaches convergence of the estimated hydraulic pressure with the one predicted with the model (Iizuka '188: Col.1, Lines 28-37). Further, Iizuka '188 teaches a method for running the converged automatic transmission system (Iizuka '188: Fig.1, Elements 26 & 13).

It would have been obvious to one (e.g. a designer) of ordinary skill in the art at the time the invention was made to combine the teachings of Iizuka '188 with Hong '1998 to create a converged model simulator for an automatic transmission controller describing the behavior of hydraulic actuator. The motivation would have been that Iizuka '188 solving the problem of correctly predicting the hydraulic pressure &

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storing it in the map or the like (Iizuka '188: Col.1, Lines 28-37). Further motivation comes from Hong '1998 as he considers modeling the clutch pressure to be complex for the complete system model (first simulation) and estimates the clutch pressure with equations 3(a), (b), (c) (Hong '1998: Pg.114), but goes on to teach that entire model or parts of it can be modified to be included in the entire model leading to reduced programming effort (Hong '1998: Pg.109, Paragraph 2). Thus both references provide motivation towards each other to improve the model of the automatic transmission system for simulation purposes.

Regarding Claim 2

Teachings of Hong '1998 are disclosed in the claim 1 rejection above. Hong '1998 does not teach a host computer for storing data for determining the transfer function by retrieving the data with a predetermined parameter.

Iizuka '188 teaches a host computer (Iizuka '188: Col.6, Lines 12-15) for storing the mechanism for the transfer function (shifting period storage portion) (Iizuka '188: Col.6, Lines 30-42) based on the predetermined parameter (target shifting period based on the predetermined driving conditions) (Iizuka '188: Col.6, Lines 35-37).

Regarding Claim 3

Teachings of Hong '1998 are disclosed in the claim 1 rejection above. Hong '1998 does not teach transfer function as being a predetermined time period after which the output of second model begins to increase.

Iizuka '188 teaches a transfer function (shifting period storage portion) (Iizuka '188: Col.6, Lines 30-42) drives the output of based on aforementioned time (Iizuka '188: Col.6, Lines 42-49).

Regarding Claim 4

Teachings of Hong '1998 are disclosed in the claim 1 rejection above. Iizuka '188 teaches that the output is generated whenever the input value is exceeding the predetermined period of time (Iizuka '188: Col.6, Lines 35-49).

Regarding Claim 5

Teachings of Hong '1998 are disclosed in the claim 1 rejection above. Iizuka '188 teaches a second transfer function to converge with estimated hydraulic pressure (Iizuka '188: Col.6, Lines 42-49).

Regarding Claim 6

Teachings of Hong '1998 are disclosed in the claim 2 rejections above. Iizuka '188 teaches the predetermined parameter is hydraulic supply command and shift interval (Iizuka '188: Fig.1, Elements 20,25,26; Col.5, Lines 60-67; Col.6, Lines 30-49).

Regarding Claim 7

Claim 7 discloses the similar limitations as claim 1 and is rejected for the same reasons as claim 1. The preamble is rejected with the same reason as in claim 1 rejection.

Iizuka '188 teaches

"...transmission characteristic analyzing means for analyzing characteristics of the transmission when shift is conducted in accordance with the shift control algorithm;..."

as shift being conducted based on the shift control algorithm through a value to determine deviation of the characteristics from predetermined standards (Iizuka '188: Col.5, Lines 46-59) using a map.

Further, Iizuka '188 teaches that the shifting period have impact on the shift shock and hence durability of the transmission (Iizuka '188: Col.1, Lines 21-36). Hence parameter extraction means to get the correct shifting period can be extracted from the system (model) based on the learning system (Iizuka '188: Fig.1, Elements 26-28). Further, Iizuka '188 teaches that the learning system can correct the shifting period if there are any anomalies (Iizuka '188: Col.2, Lines 50-57). Motivation to combine the references is the same as in claim 1.

Regarding Claim 8

Iizuka '188 teaches repeating as the process for correct shifting and hydraulic pressure values (Iizuka '188: Col.8 Lines 17-29; 62-67; Col.9 Lines 1-8).

Regarding Claim 9

The behavior of the model, i.e. how the output should be optimized through the model, is stored (Iizuka '188: Col.6, Lines 30-45).

Regarding Claim 10

Iizuka '188 teaches at least part of the shift control algorithm is based on the forecast (Iizuka '188 Col.6, Lines) in form of a map.

Regarding Claim 11

Iizuka '188 teaches that automatic transmission fluid temperature is at least one of the parameters (Iizuka '188: Col.8, Lines 3-16).

Regarding Claim 12

Claim 12 discloses similar limitations as claim 1 and it is rejected for those limitation with the same reasons. Further, Iizuka '188 teaches shift being conducted based on the shift control algorithm through a value to determine deviation of the characteristics from predetermined standards (Iizuka '188: Col.5, Lines 46-59) using a map.

Further, Iizuka '188 teaches that the shifting period have impact on the shift shock and hence durability of the transmission (Iizuka '188: Col.1, Lines 21-36). Hence parameter extraction means to get the correct shifting period can be extracted from the system (model) based on the learning system (Iizuka '188: Fig.1, Elements 26-28). Further, Iizuka '188 teaches that the learning system can correct the shifting period if there are any anomalies (Iizuka '188: Col.2, Lines 50-57).

Further, Iizuka '188 teaches repeating as the process for correct shifting and hydraulic pressure values to fix anomalies (Iizuka '188: Col.8 Lines 17-29; 62-67; Col.9 Lines 1-8). Motivation to combine the references is the same as in claim 1.

Regarding Claim 13

Claim 13 discloses the same limitations as claim 8 and is rejected for the same reasons as claim 8.

Regarding Claim 15

Claim 15 discloses the same limitations as claim 9 and is rejected for the same reasons as claim 9.

Regarding Claim 16

Claim 16 discloses the same limitations as claim 10 and is rejected for the same reasons as claim 10.

Regarding Claim 17

Claim 17 discloses the same limitations as claim 11 and is rejected for the same reasons as claim 11.

Regarding Claim 18

Claim 18 discloses the same limitations as claim 1 and is rejected for the same reasons as claim 1.

Regarding Claim 19

Claim 19 discloses the same limitations as claim 2 and is rejected for the same reasons as claim 2.

Regarding Claim 20

Claim 20 discloses the same limitations as claim 3 and is rejected for the same reasons as claim 3.

Regarding Claim 21

Claim 21 discloses the same limitations as claim 4 and is rejected for the same reasons as claim 4.

Regarding Claim 22

Claim 22 discloses the same limitations as claim 5 and is rejected for the same reasons as claim 5.

Regarding Claim 23

Claim 23 discloses the same limitations as claim 6 and is rejected for the same reasons as claim 6.

Regarding Claim 24

Claim 24 discloses the same limitations as claim 7 and is rejected for the same reasons as claim 7.

Regarding Claim 25

Claim 25 discloses the same limitations as claim 8 and is rejected for the same reasons as claim 8.

Regarding Claim 26

Claim 26 discloses the same limitations as claim 9 and is rejected for the same reasons as claim 9.

Regarding Claim 27

Claim 27 discloses the same limitations as claim 10 and is rejected for the same reasons as claim 10.

Regarding Claim 28

Claim 28 discloses the same limitations as claim 11 and is rejected for the same reasons as claim 11.

Regarding Claim 29

Claim sections 29(a), 29(b), 29(c) discloses the same limitations as claim 1 and are rejected for the same reasons as claim 1. Further, Claim sections 29(d), 29(e), 29(f)

disclose the same limitations as claim 7 and are rejected for the same reasons as claim 7.

Regarding Claim 30

Claim 30 discloses the same limitations as claim 8 and is rejected for the same reasons as claim 8.

Regarding Claim 32

Claim 32 discloses the same limitations as claim 9 and is rejected for the same reasons as claim 9.

Regarding Claim 33

Claim 33 discloses the same limitations as claim 10 and is rejected for the same reasons as claim 10.

Regarding Claim 34

Claim 34 discloses the same limitations as claim 11 and is rejected for the same reasons as claim 11.

End of Rejections.

***Remarks***

- 12. PTO-892 is updated to include the Hong '1998 reference used above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akash Saxena whose telephone number is (571) 272-8351. The examiner can normally be reached on 8:30 - 5:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean R. Homere can be reached on (571)272-3780. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Akash Saxena  
Patent Examiner, GAU 2128  
(571) 272-8351



JEAN R. HOMERE  
PRIMARY EXAMINER